

CLAIMS

What is claimed is:

1. A print head comprising:
an orifice plate comprising at least two orifices;
wherein at least one orifice prints a first reactive ink;
wherein at least one other orifice prints a fixer or a second reactive ink;
wherein the first reactive ink and the fixer or second reactive ink react to form a solid precipitate; and
wherein the solid precipitate is redispersible in at least one of the fixer or the first reactive ink, or the second reactive ink.
2. The print head of claim 1 wherein the orifice plate comprises at least two arrays of orifices and wherein one array prints the reactive ink and wherein another array prints the fixer or the second reactive ink.
3. The print head of claim 1 wherein the at least one other orifice prints a fixer and the fixer comprises a positively charged species.
4. The print head of claim 1 wherein the positively charged species is a polymer.
5. The print head of claim 4 wherein the fixer is selected from the group consisting of poly(ethyleneimine), polyguanidines, poly(diallyldimethylammonium chloride), poly(dimethylamine-co-ethylenediamine), imidized poly(styrene-co-maleic anhydride), polyguanides, and salts thereof.
6. The print head of claim 5 wherein the fixer comprises polyethyleneimine and poly(biguanidine) or salts thereof.
7. The print head of claim 1 wherein the printing is controlled by an

electronic device.

8. The print head of claim 1 wherein the reactive ink comprises at least two dyes.
9. An orifice plate for a print head, the orifice plate comprising:
 - at least two orifices;
 - wherein at least one orifice prints a ink;
 - wherein the second orifice prints at least one of a fixing agent or a second ink;
 - wherein the ink and the at least one of the fixing agent or the second ink react to form a precipitate; and
 - wherein the precipitate is redispersible in at least one of the first ink or the at least one of the fixing agent or the second ink.
10. The orifice plate of claim 9 comprising at least two arrays of orifices and wherein one array prints the first ink and wherein another array prints the at least one of the fixing agent or the second ink.
11. The orifice plate of claim 9 wherein the second orifice prints the fixing agent and the fixing agent comprises a positively charged species.
12. The orifice plate of claim 11 wherein the positively charges species comprises a polymer.
13. The orifice plate of claim 11 wherein the positively charged species comprises poly(ethyleneimine), polyguanidines, poly(diallyldimethylammonium chloride), poly(dimethylamine-co-ethylenediamine), imidized poly(styrene-co-maleic anhydride), polyguanides, and salts thereof.
14. The orifice plate of claim 13 wherein the fixing agent comprises polyethyleneimine and poly(biguanidine) or salts thereof.

15. The orifice plate of claim 9 wherein the printing is controlled by an electronic device.
16. The orifice plate of claim 9 wherein the reactive ink comprises at least two dyes.
17. A method for marking a medium, the method comprising:
printing at least one of a fixer or first reactive ink onto the medium; and
printing a second reactive ink onto the medium;
wherein the at least one of the fixer or first reactive ink and the second reactive ink react to deposit a precipitate onto the medium;
wherein the precipitate is redispersible in at least one of the at least one of the fixer or first reactive ink or the second reactive ink; and
wherein the second reactive ink and the at least one of the fixer and the first reactive ink are printed from the same orifice plate.
18. The method of claim 17 wherein the orifice plate comprises at least two arrays of orifices and wherein one array prints the second reactive ink and wherein another array prints the fixer or the first reactive ink.
19. The method of claim 17 wherein the fixer comprises a positively charged species.
20. The method of claim 19 wherein the fixer comprises a polymer.
21. The method of claim 19 wherein the fixer comprises poly(ethyleneimine), polyguanidines, poly(diallyldimethylammonium chloride), poly(dimethylamine-co-ethylenediamine), imidized poly(styrene-co-maleic anhydride), polyguanides,

and salts thereof.

22. The method of claim 21 wherein the fixer comprises polyethyleneimine and poly(biguanidine) or salts thereof.

23. The method of claim 17 wherein the printing is controlled by an electronic device.

24. The method of claim 17 wherein the reactive ink comprises at least two dyes.

25. A means for marking a substrate, the means comprising:
a means for depositing a colorant onto the substrate; and
a means for depositing a fixing agent onto the substrate;
wherein the colorant and the fixing agent are deposited through
the same orifice plate;
wherein the colorant and the fixing agent react to mark the
substrate with a precipitate; and
wherein the precipitate is redispersible in at least one of the
colorant or the fixing agent.

26. The means of claim 25 wherein the orifice plate comprises at least two arrays of orifices and wherein one array prints the colorant and wherein another array prints the fixing agent.

27. The means of claim 25 wherein the fixing agent is a positively charged species.

28. The means of claim 27 wherein the fixing agent comprises a polymer.

29. The means of claim 27 wherein the fixing agent comprises poly(ethyleneimine), polyguanidines, poly(diallyldimethylammonium chloride),

poly(dimethylamine-co-ethylenediamine), imidized poly(styrene-co-maleic anhydride), polyguanides, and salts thereof.

30. The means of claim 29 wherein the fixing agent comprises polyethyleneimine and poly(biguanidine) or salts thereof.

31. The means of claim 25 wherein the means for marking is controlled by an electronic device.

32. The means of claim 25 wherein the reactive ink comprises at least two dyes.